

**Translation**

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

|  |   |   |                       |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
|--|---|---|-----------------------|-------------------------------------|-----------|---------------------|--------------------------|------------|----------|--------------------------|-------------|--|--------------------------|------------|----------------------------|-------------------------------------|-----------|---|--------------------------|------------|-------------------------|--------------------------|-------------|--|--------------------------|--------------|---|
| Applicant's or agent's file reference<br><b>DB3917_JS</b>  |   | FOR FURTHER ACTION  | See Form PCT/IPEA/416 |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| International application No.<br><b>PCT/FR2004/000928</b>  | International filing date (day/month/year)<br><b>15.04.2004</b> | Priority date (day/month/year)<br><b>17.04.2003</b>   |                       |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| International Patent Classification (IPC) or national classification and IPC   |   |   |                       |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| Applicant<br><b>SAINT-GOBAIN CENTRE DE RECHERCHES ET D'ETUDES EUROPEEN</b>   |   |   |                       |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <b>6</b> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <table border="0"><tr><td><input checked="" type="checkbox"/></td><td>Box No. I</td><td>Basis of the report</td></tr><tr><td><input type="checkbox"/></td><td>Box No. II</td><td>Priority</td></tr><tr><td><input type="checkbox"/></td><td>Box No. III</td><td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td></tr><tr><td><input type="checkbox"/></td><td>Box No. IV</td><td>Lack of unity of invention</td></tr><tr><td><input checked="" type="checkbox"/></td><td>Box No. V</td><td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VI</td><td>Certain documents cited</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VII</td><td>Certain defects in the international application</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VIII</td><td>Certain observations on the international application</td></tr></table> |   |   |                       | <input checked="" type="checkbox"/> | Box No. I | Basis of the report | <input type="checkbox"/> | Box No. II | Priority | <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | <input type="checkbox"/> | Box No. IV | Lack of unity of invention | <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | <input type="checkbox"/> | Box No. VI | Certain documents cited | <input type="checkbox"/> | Box No. VII | Certain defects in the international application | <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |
| <input checked="" type="checkbox"/>  | Box No. I   | Basis of the report   |                       |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>   | Box No. II  | Priority  |                       |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>   | Box No. III   | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |                       |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>   | Box No. IV  | Lack of unity of invention  |                       |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input checked="" type="checkbox"/>  | Box No. V   | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |                       |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>   | Box No. VI  | Certain documents cited   |                       |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>   | Box No. VII   | Certain defects in the international application  |                       |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>   | Box No. VIII  | Certain observations on the international application   |                       |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| Date of submission of the demand   |   | Date of completion of this report   |                       |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| Name and mailing address of the IPEA/EP  |   | Authorized officer  |                       |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| Facsimile No.  |   | Telephone No.   |                       |                                     |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FR2004/000928

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
  - ☐ publication of the international application (Rule 12.4)
  - ☐ international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☐ the international application as originally filed/furnished
- ☒ the description:

pages 1-6 \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☒ the claims:

nos. 1-9 \_\_\_\_\_ as originally filed/furnished

nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19

nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☐ the drawings:

sheets \_\_\_\_\_ as originally filed/furnished

sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FR2004/000928

| Box No. V   | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |      |     |
|---|---|------|-----|
| 1. Statement  |   |      |     |
| Novelty (N)   | Claims  | 1-9  | YES |
|   | Claims  | -    | NO  |
| Inventive step (IS)   | Claims  | 1-7  | YES |
|   | Claims  | 8, 9 | NO  |
| Industrial applicability (IA)   | Claims  | 1-9  | YES |
|   | Claims  | -    | NO  |
| 2. Citations and explanations (Rule 70.7)   |   |      |     |
| 1. In the present report, reference is made to the following documents:   |   |      |     |
| <p><b>D1:</b> DATABASE WPI, Week 199613, Derwent Publications Ltd., London, GB; AN 127577 XP002300328 SOKOLOV V A: "Fused and cast refractory for glass making furnace lining - contains oxide(s) of aluminium, silicon, boron and at least one of sodium, potassium, lithium, and one of magnesium and calcium, and fluorine or chlorine" - &amp; <b>RU 2 039 025 C</b> (SOKOLOV V A) 9 July 1995;</p> |   |      |     |
| <p><b>D2:</b> POPOV O N: "RATIONAL USE OF REFRACTORIES AND OPTIMUM DESIGNS OF REGENERATOR CHECKERWORK IN GLASS-MELTING FURNACES" GLASS AND CERAMICS, CONSULTANTS BUREAU. NEW YORK, US, vol. 59, no. 9/10, September 2002, pages 335-338, <b>XP001144064</b> ISSN: 0361 -7610.</p>   |   |      |     |
| 2. CLAIMS 1-7   |   |      |     |
| 2.1 Document D1 describes (the references between   |   |      |     |

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FR2004/000928

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

parentheses apply to said document):

a fused cast refractory material having the following oxide composition (expressed as a percentage by weight): 98.3% of  $\text{Al}_2\text{O}_3$ , 0.5% of  $\text{SiO}_2$ , 0.4% of  $\text{MgO}$ , 0.1% of  $\text{CaO}$ , 0.1% of  $\text{B}_2\text{O}_3$  and 0.1% of F (table 1, composition 4). The subject matter of claim 1 differs in that the  $\text{MgO}$  content is  $0.4\% < \text{MgO} < 2.5\%$  and the  $\text{B}_2\text{O}_3$  content is  $\text{B}_2\text{O}_3 < 0.05\%$ . It follows that the subject matter of claim 1 is novel (PCT Article 33(2)).

The problem that the present invention is intended to solve can therefore be considered to be that of providing an alternative to the refractory material described in document D1. A person skilled in the art seeking an alternative to the material described in D1 would not have been prompted by said document to diverge by 0.05% from the  $\text{B}_2\text{O}_3$  contents described therein. On the contrary, in view of the narrowness of the  $\text{B}_2\text{O}_3$  content range described in D1, the fact that the lower limit of said range is close to 0 and the fact that said range limited the scope of the claims in D1, a person skilled in the art would have been discouraged from exploring the range of 0 to 0.1%.

It follows that the subject matter of claim 1 involves an inventive step (PCT Article 33(1) and 33(3)).

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

2.2 Claims 2-7 are dependent on claim 1 and, as such, therefore also fulfil the PCT requirements of novelty and inventive step.

### 3. CLAIMS 8 AND 9

3.1 The present application does not fulfil the requirements set forth in PCT Article 33(1) because the subject matter of claim 8 does not involve an inventive step as defined in PCT Article 33(3).

Document D2, which is considered to be the closest prior art, describes a fused cast refractory material (ER 5312 RX, see table 1) that is used as a checker work element in a glass furnace regenerator, from which the one disclosed in claim 8 differs in that the MgO content is  $0.4\% < \text{MgO} < 2.5\%$ .

The problem that the present invention is intended to solve can therefore be considered to be that of providing a fused cast refractory material that has reduced porosity so as to increase resistance to thermal shock.

The solution proposed in claim 8 of the present application is not considered to be inventive (PCT Article 33(3)), for the following reasons:  
According to the Derwent abstract for document D1, the refractory material described in paragraph 2

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FR2004/000928

| Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement   |
|-----------|---|
|           | <p>above offers the same advantages as the one disclosed in the present application. Indeed, it is a result of the reduced MgO content in the material described in D1 that its resistance to thermal shock is enhanced. It follows that it would be a routine step for a person skilled in the art seeking to solve the stated problem to reduce the MgO content in the fused cast refractory material described in document D2.</p> <p>3.2 Claim 9 does not contain any features which, in combination with the features of any one of the claims to which they refer, fulfil the PCT requirements of novelty and inventive step (PCT Article 33(2) and 33(3)).</p> |